REMARKS

The Non-Final Office Action mailed September 27, 2006 and the references cited therein have been carefully considered. Claims 1-21 are pending in the application, including independent Claim 1. Applicants have not amended any of the claims in the present response. Applicants respond specifically below to the issues raised in the subject Office Action.

In the Office Action, each of Claims 1-4 and 9-21 were rejected under 35 U.S.C. 102(b) as being anticipated by German Patent No. 10044465 A1 to Müller (*Müller*). Additionally, Claim 5-8 were rejected under 35 U.S.C. 103(a) as being obvious over *Müller*. Applicants respectfully traverse these rejections and request further consideration in light of the arguments presented below. Please note that for discussion purposes, references to the disclosure in *Müller* are cited herein to the English language equivalent published as Canadian Patent Application No. CA 2421101 A1.

Müller describes a data support member having an embossed structure with a printed coating. In particular, *Müller* teaches providing a structure that includes some areas of coating that are visible, while other areas are not visible, dependant on the viewing angle, which creates an optically variable effect. As shown in Fig. 2, the structure is composed of a line screen 4 consisting of printed lines of a specific color, printed on a paper substrate 1. The paper substrate 1 is then pressed into a steel intaglio printing plate, creating an embossed structure 18 (see page 13, second paragraph). The embossed structure 18 consists of directly adjacent triangular profiles, viewed in cross section. Both of the two upper sides of the triangular profiles are

referred to as the "flanks" of the embossed structure. The line widths are between 25 μm and 300 μm, preferably 55 μm to 150 μm, wherein the width of the printed lines is somewhat smaller than the flanks of the embossed structure lines. The result is a combination of printed lines 4 and an embossed structure 18, as shown in Figs. 5-10. The dark shaded areas represent the printed lines 4 and the thin lines 6 represent the bottom of each valley of the embossed structures 18. The zeniths of the embossed structures are not shown in the Figures.

As described in *Müller*, the printed lines 4 cover a region on one of the two flanks of the embossed structure 18. Thus, the printed line screen 4 is only visible when viewed from a specific viewing angle range, and not visible outside that range where it is hidden by the embossed structure. For example with reference to Fig. 2, from viewing direction C the embossed structure 18 hides the printed line screen 4 from the viewer. In contrast, the printed line screen 4 is visible to the viewer from directions A and B. Accordingly, *Müller* teaches a shadowing effect, where the light reflected from certain viewing angles is shadowed by the neighboring structure. *Müller* achieves the effect through a macroscopic deformation of the substrate surface. However, if the distance between adjacent zeniths of the embossed structure is too small, the light is diffracted which disturbs the shadowing effect.

Additionally, it is a basic principle of *Müller* that the printed lines 4 be a constant width in all areas of the structure, while the embossed structure differs in one area (see claim 1 of *Müller*). For example, Fig. 5 shows printed line screen 4, which is uniform in the areas inside and outside the area of information 12 (U-shaped area). In contrast, the embossed structure 13 in

area of information 12 differs from the embossed structure 6 in the background area outside area 12. *Müller* provides a phase shift between structure 6 and structure 13. Thus, the left side flanks of structure 13 are coated with the printed line screen 4, while the right side flanks of structure 6 are similarly coated. Thus, in viewing direction C, the viewer perceives the print 4 in the area of information 12, but none of the print 4 in the background area. In contrast, in viewing direction B, the viewer perceives the print 4 on structure 6 in the background area only and none of the print 4 in the area of information 12.

Consequently, *Müller* does not disclose or suggest the present invention. In particular, *Müller* discloses an embossing structure that works in reflection and not diffraction. Independent Claim 1 of the present invention specifies a diffraction structure, which is not present in *Müller*. In fact, it is essential that *Müller* work in reflection in order to provide the shadowing effect, which is a fundamental teaching of the reference. This is further demonstrated by the dimensions of *Müller's* optically variable structure 2. With line widths of between 25 μm and 300 μm (preferably 170 μm plus 30 μm spacing), the distance between the zeniths of the embossed structure 6 can be estimated to be between 50 μm and 600 μm (roughly 2x's the line widths). This translates to a spatial frequency of between 20 and 1.66 lines/mm. In contrast, normal diffraction gratings have a spatial frequency of between 300 and thousands of lines/mm. Thus, *Müller* does not disclose the structure recited by the Claims of the instant application.

Further, *Müller* does not disclose or suggest having a surface region that is divided into microscopically fine pattern regions and a background region, with a first microstructure shaped

in the pattern regions but not in the background region. Also, the pattern regions of *Müller* are not arranged in the form of a moiré pattern having a plurality of lines phase displaced in region-wise manner to produce the concealed information.

Even assuming the printed screen lines 4 of *Müller* form a pattern with a plurality of lines, and could therefore be considered as a plurality of pattern regions, these lines are constant in all areas (see *Müller* Claim 1). There is no phase shift between the printed line screens in different regions of the element. Also, there is no microstructure that is shaped only in the pattern regions (e.g. coated areas) but not in the background regions (not coated areas). The embossed structures 6 and 13 of Fig. 5 cover both areas.

Alternatively, assuming that in *Müller* the area of information 12 forms the pattern region and the surrounding area forms the background region. It is clear that in *Müller* the area of information 12 and the surrounding area are covered with different embossed structures (see Fig. 5; embossed structure 13 in the area of information 12 and embossed structure 6 in the surrounding area). Thus, the area of information 12 (forming a pattern region) does not form of a moiré pattern with a plurality of lines with line spacing in the range of 40 to 200 μm and a regional-wise phase displacement between these lines. While the U-shape could be considered a pattern region, that region does not contain the further claim limitations recited.

In contrast, the present invention employs a pattern region (21 to 40 of Fig. 2) that includes a diffractive structure (17 of Fig. 1) wherein the background region (region 20 of Fig. 2) is not filled with this structure (see Fig. 1; pattern region 17 with diffractive structure and

background region 18 without this structure). The pattern regions are arranged in the form of a line grating which is sub-structured according to sub-structuring function and phase displaced in region-wise manner. Each of the patterned regions (21 to 40 of Fig. 2) represents a line that is sub-structured in the form of a meander-shaped pattern. Due to the phase-displacement of the sub-structured lines within the V-shape region (3), concealed information is encoded within this region.

Thus in accordance with the present invention, with the naked eye, a viewer perceives a first item of information, i.e. the optical variable effect produced by the diffraction structure which is perceived all over the surface region 2. Since the spacing between the pattern region is in the range of 40 to 200 μm, the viewer will not recognize the line spacing nor the phase displacement. Rather, the viewer will perceive a constant, optical variable effect within the whole surface region 2. e.g. a predefined hologram. When using an associated verification element which has the same line spacing as the moiré pattern, the concealed information becomes visible and the viewer recognizes a second item of information. Thus, depending on the alignment of the verification element with the substructured lines representing the pattern regions, the viewer will perceive the optical variable effect of the diffractive structure only in the V-shaped region 3 (if the line of the verification element covers the region 21, 22, 24, 26, 27, 29, 30, 32, 34, 36, 37, 39) or only in the surrounding regions (if the lines of the verification element covers the region 23, 25, 28, 30, 33, 35, 38, 40). Additionally, the viewer can perceive a third

item of information which is the microscopically sub-structuring (meander-shape form) when using a magnification tool.

Müller clearly does not disclose or suggest having a concealed item of information which can be evaluated by means of an associated verification element. Also, it does not disclose or suggest having a sub-structuring of pattern regions which encodes additional items of information. Thus, for these reasons and the further reasons stated above, Applicants respectfully submit that *Müller* does not contain all the elements of independent Claim 1 or the dependent Claims 2-21.

Additionally, to reject claims in an application under Section 103, an Examiner must show an un-rebutted *prima facie* case of obviousness. *In re Rouffett*, 149 F.3d. 1350, 1355 (Fed. Cir. 1998). To establish a *prima facie* case of obviousness based on a combination of elements disclosed in the prior art, an examiner must articulate the basis on which it concludes that it would have been obvious to make the claimed invention. In practice, this requires an explanation of the reasons one of ordinary skill in the art would have been motivated to select particular references and to combine them to render the claimed invention obvious. Without such explanation, the courts infer that the Patent Office has used impermissible hindsight to conclude that the invention was obvious. *In re Kahn*, 78 U.S.P.Q.2d 1329, 1335 (Fed. Cir. 2006). In the present case, no *prima facie* case of obviousness has been established. Initially, all the elements of the claimed invention have not been shown in the prior art. Also, no motivation to combine teaching has been elicited and only through hindsight has the Examiner arrived at the

claimed invention. Further, it should be understood that the above arguments apply equally to the distinct elements of each of the dependant claims 2-21. Thus, Applicants respectfully request reconsideration of the anticipation and obviousness rejections.

In view of the foregoing remarks, reconsideration and allowance are respectfully solicited. If the Examiner has any questions or suggestions of possible amendment for allowance, she is cordially invited to contact Applicants' attorney at the telephone number provided.

Respectfully submitted,

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